

THE OPEN UNIVERSITY OF SRI LANKA

B.Sc./B.Ed. DEGREE PROGRAMME – 2008/2009

BOTANY – LEVEL 04

BTU 2201/BTE 4201 – PLANT PHYSIOLOGY

ASSESSMENT TEST II – (NO BOOK TEST)

DURATION : ONE (01) HOUR

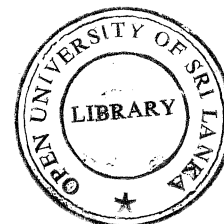


Registration No. ....

DATE : 28<sup>th</sup> March 2009

TIME: 4.00 p.m. – 5.00 p.m.

ANSWER ALL QUESTIONS IN THE SPACE PROVIDED.



01. Fill in the blanks with the most appropriate word/words.

- (a) Some RNA in the nucleus can be enzymes and these are called \_\_\_\_\_.
- (b) Concentration of substrate which requires to cause half the maximal reaction rate is named as \_\_\_\_\_.
- (c) Non competitive inhibitors differ from competitive inhibitors that they do not compete with the \_\_\_\_\_ for \_\_\_\_\_.
- (d) Hydrolases catalyze the addition of \_\_\_\_\_ molecules to a particular substrate and bring about decomposition of the substrate into smaller, simpler units.
- (e) Enzymes that catalyze reactions in which molecules are joined together are called \_\_\_\_\_.
- (f) Interior of the chloroplast is filled with a gel-like, enzyme-rich material called the \_\_\_\_\_.
- (g) Accessory pigments protect chlorophyll from \_\_\_\_\_.
- (h) Light reactions of photosynthesis take place in the \_\_\_\_\_.
- (i) Synthesis of ATP from the transport of electrons excited by light energy down an electron transport chain is called \_\_\_\_\_.
- (j) During light reactions of photosynthesis, \_\_\_\_\_ energy is absorbed by photosynthetic pigments, converted to \_\_\_\_\_ energy and stored in high energy compounds \_\_\_\_\_ and \_\_\_\_\_.

- (k) \_\_\_\_\_ is the initial CO<sub>2</sub> acceptor in C<sub>3</sub> plants.
- (l) PEP fixes CO<sub>2</sub> to form 4C compounds \_\_\_\_\_ or \_\_\_\_\_.
- (m) In CAM plants, initial CO<sub>2</sub> fixation and the C<sub>3</sub> cycle are separated in \_\_\_\_\_ and in C<sub>4</sub> plants the two processes are separated in \_\_\_\_\_.
- (n) Arrangement of cells in C<sub>4</sub> leaves is referred to as \_\_\_\_\_ anatomy.

02. (a) What is respiration?

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(b) Give Four (04) differences between **photosynthesis** and **respiration**.

	<b>Photosynthesis</b>	<b>Respiration</b>
i.	.....	.....
ii.	.....	.....
iii.	.....	.....
iv.	.....	.....

(c) Name the process by which a 6-carbon sugar is converted to pyruvic acid.  
 .....

(d) Where in the cell does this process occur?  
 .....

(e) Why is ATP used in this process?  
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 .....

(f) Distinguish between substrate-level phosphorylation and oxidative phosphorylation.  
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(g) What is meant by 'respiratory quotient'?

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(h) What is the significance of R.Q. value?

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03. (a) What is biological nitrogen fixation?

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(b) What is the importance of having heterocysts in  $N_2$  fixing cyanobacteria?

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(c) Briefly describe how nodulation of legumes by *Rhizobium* takes place.

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(d) What is the role of leghemoglobin, a pigment found in legume nodules?

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(e) Name three organisms which are capable of fixing atmospheric nitrogen through a symbiotic association.

(i) .....

(ii) .....

(iii) .....

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